

Communicable Diseases Weekly Report

Week 7, 15 to 21 February 2016

In summary, we report:

- [Mosquito-borne alphavirus infections](#) – detection of Barmah Forest virus in a mosquito
- [Zika virus infections](#) - update
- [Lead notifications](#) – new reporting level
- [Summary of notifiable conditions activity in NSW](#)

For further information on infectious diseases on-line see [NSW Health Infectious Diseases](#). Also see [NSW Health Infectious Diseases Reports](#) for links to other surveillance reports.

Mosquito-borne alphavirus infections

Mosquitoes can carry a range of viruses and transmit these to humans and other animals. Such viruses are called arboviruses, with those of public health importance belonging to one of three virus genera: flavivirus, alphavirus and bunyavirus. Ross River virus (RRv) and Barmah Forest virus (BFv) are the mosquito-borne alphaviruses most commonly notified in NSW. Their main host is probably native animals and certain species of mosquitoes become infected after biting an animal that has an arbovirus circulating in its blood. If that mosquito subsequently bites a human they can transmit the infection.

Some people who are infected with an arbovirus do not develop symptoms, while others experience flu-like symptoms that include fever, chills, headache and aches and pains in the muscles and joints. People with RRv or BFv infection often report that their joints can become swollen, and joint stiffness may be particularly noticeable in the morning. A rash may also appear on the torso, arms or legs. The rash and other symptoms usually resolve after 7 to 10 days, although some people may experience symptoms such as joint pain and tiredness for many months.

NSW Health monitors arboviral activity in several ways: testing mosquitoes for arboviruses; testing whether sentinel chicken flocks have been infected with arboviruses; and through human notifications of arboviral infections. The first detection of BFv for the 2015/16 season was reported this week in a mosquito trapped in Griffith. So far this season no mosquitoes carrying RRv have been detected in NSW, and there have been no signals that the sentinel chicken flocks have been exposed to arboviruses.

Human notifications of locally-acquired arboviral infections have been lower this year than in 2015 (Table 1). This is partly explained by lower mosquito numbers and less frequent detection of arboviruses in mosquitoes. However a change in the national case definitions of RRv and BFv infections from 1 January 2016 will result in fewer arboviral notifications as more stringent criteria are now needed to confirm notifications of these infections. Either isolation of the virus or two blood tests demonstrating a significant rise in specific antibody levels is now needed to demonstrate confirmed infection, whereas previously a single high antibody level had been sufficient.

There are no vaccines to protect against the arboviruses that cause human infections in NSW, therefore prevention relies on measures to avoid being bitten by mosquitoes and to reduce mosquito breeding near homes. Mosquitoes that carry these viruses are usually most active in the hours after sunset and again around dawn, but may bite throughout the day.

During summer and autumn months remember to cover up and take care to reduce your chances of picking up a serious mosquito-borne infection by following these simple precautions:

- Use an effective repellent on exposed skin areas. Re-apply repellent every few hours, according to the instructions, as protection wears off from perspiration, particularly on hot nights or during exercise.
- The best mosquito repellents contain diethyl toluamide (DEET) or picaridin. Repellents containing oil of lemon eucalyptus provide adequate protection. Botanical based products (e.g. eucalyptus, citronella) provide only short periods of protection.
- Topical repellents are not recommended for use on babies below the age of 3 months.
- Note that prolonged or excessive use of repellents can be dangerous, particularly on babies and young children. Avoid putting repellent near eyes and mouth, spread sparingly over the skin, and rinse off once you are indoors.
- Provide mosquito netting, where necessary – both indoors and outdoors.
- Cover up as much as possible with loose fitting clothing and sensible footwear. Avoid tight clothes.
- Cover your clothes with repellent as mosquitoes can bite through material, but be careful as some repellents stain clothes.
- Use mosquito coils outdoors and plug-in devices with vaporising mats indoors.

For further information:

- [NSW Arbovirus Surveillance and Mosquito Monitoring Program](#) (external link)
- NSW Health [Mosquitoes are a Health Hazard](#) factsheet with tips on prevention
- NSW Health [Fight the Bite! campaign posters and media resources](#)
- NSW Health [Ross River virus notifications data](#).
- NSW Health [Barmah Forest virus notifications data](#)

Zika Virus Infections

There was one new case of Zika virus (ZIKV) infection confirmed in this reporting week in a person who had travelled to Central America in January and become symptomatic with fever, rash and joint pain shortly after their return to NSW. Confirmation of ZIKV infection can take up to one month; if the virus is not detected in an initial blood sample then a significant rise in specific antibody levels needs to be demonstrated by comparing concentrations with a sample collected at least two weeks later. This is the third case of ZIKV infection confirmed in a NSW resident this year. Only one case was notified in 2015 and four cases in 2014.

ZIKV infection is a mosquito-borne flavivirus infection that has recently spread rapidly across the Americas after an initial introduction into Brazil. ZIKV was introduced into the Americas in 2015 but it has previously been found in other parts of the world, and caused outbreaks in a number of Pacific states over the past three years. While bites from infected mosquitoes are the predominant mode of transmission, two cases of sexual transmission in the United States have been documented from travellers who acquired the infection in an area experiencing a ZIKV outbreak.

ZIKV is closely related to dengue virus and can cause a similar illness. However the infection often causes no symptoms and when it does the illness is usually mild and lasts four to seven days. There is no vaccine against ZIKV and no specific antiviral treatment.

The recent outbreaks in the Pacific and the Americas, particularly in Brazil, have raised concerns that ZIKV infection might cause birth defects if the mother becomes infected while pregnant, but further studies are required to confirm or exclude this link.

With the explosive spread of ZIKV in the Americas it is expected that more cases of infection will be identified in NSW this year in returned travellers.

The *Aedes aegypti* mosquitoes that are primarily responsible for transmission of ZIKV are not established in NSW but are found in parts of north Queensland. There is a risk that local outbreaks could occur in north Queensland (as occasionally occurs with dengue) if an infected person visited and was bitten by mosquitoes, but this is not a risk in NSW.

Women who are pregnant or planning to become pregnant are being advised to consider delaying their travel to areas with active outbreaks of ZIKV. This week the Communicable Disease Network Australia published new guidance for screening pregnant women who have visited Zika affected areas, and advice for reducing sexual transmission of ZIKV infection. This advice is available at:

<http://www.health.gov.au/internet/main/publishing.nsf/Content/ohp-zika.htm>

Travellers to affected areas should avoid being bitten by mosquitoes. *Aedes aegypti* mosquitoes prefer to live and bite people indoors, and peak biting activity is during daylight hours. They hide under furniture and tend to bite the feet and ankles. People may not notice they are being bitten.

Travellers to affected areas should stay in accommodation with screened windows and doors, wear loose fitting clothing that covers the arms and legs, and apply insect repellent containing DEET, picaridin, or oil of lemon eucalyptus to exposed skin, especially during daylight hours and in the early evening. For additional advice on steps to avoid being bitten by mosquitoes see the [Mosquitoes are a Health Hazard Factsheet](#).

For more information see the [Zika virus alert](#) and [Zika virus factsheet](#). Also see the Commonwealth Department of Health [Zika virus website](#) for a list of countries with active transmission of the virus.

Lead Notifications

On 22 February 2016 the blood lead level that is notifiable in NSW was reduced from 10 micrograms per decilitre to 5 micrograms per decilitre. This continued the trend of making notification levels for lead more stringent, which has occurred on a background of declining blood lead levels in the Australian population broadly. The latest change occurred in response to the release of the [NHMRC Statement and Information Paper: Evidence on the Effects of Lead on Human Health](#).

This review found that it is well established that a blood lead level greater than 10 micrograms per decilitre can have harmful effects on body organs and functions. A blood lead level greater than 5 micrograms per decilitre suggests that the individual has been exposed to lead above the background level in Australia. Because of this, it is recommended that the source of the exposure is investigated and reduced particularly if the person is a child or pregnant woman.

The effects of raised blood lead levels are highly variable but in general can include:

- 5-10 micrograms per decilitre: an association was observed between higher occurrence of behavioural problems in children, increased blood pressure in adults and a delay in sexual maturation or puberty onset in adolescent girls and boys, but the evidence is insufficient to establish a causal association with lead exposures. Associations observed in these studies had stronger influences from other factors such as socioeconomic status, education, parenting style, diet, or exposure to other substances.
- Over 10 micrograms per decilitre: increased blood pressure, anaemia, kidney damage and abnormal brain function, including a potential reduction in Intelligence Quotients (IQ) of children.
- Death can occur at levels between 100 to 120 micrograms per decilitre in adults and 70 to 100 micrograms per decilitre in children.

Notifications of raised blood lead level are now infrequent in most areas in NSW. In 2015 there were 390 notifications of raised blood lead levels, with 25% of notifications from Broken Hill and surrounding areas. This represents an ongoing exposure in this community from local lead mining and processing activities. Boolaroo in the Hunter was a community that historically had exposure from a local industry. A blood lead survey conducted on local children in Boolaroo in 2015 found no levels above 5 micrograms per decilitre.

Summary of notifiable conditions activity in NSW

The following table summarises notifiable conditions activity over the reporting period (Table 1).

Table 1: NSW Notifiable conditions from 15 to 21 February 2016, by date received *

		Weekly		Year to date			Full Year	
		This week	Last week	2016	2015	2014	2015	2014
Enteric Diseases	Cryptosporidiosis	24	31	184	170	106	1038	429
	Giardiasis	110	96	648	603	449	3415	2942
	Listeriosis	3	0	8	4	5	26	23
	Rotavirus	11	9	110	73	58	1036	714
	STEC/VTEC	1	1	6	5	16	29	31
	Salmonellosis	119	186	1107	969	879	4060	4302
	Shigellosis	7	6	45	35	59	172	212
	Typhoid	4	4	16	7	12	41	44
Respiratory Diseases	Influenza	127	136	764	531	492	30297	20888
	Legionellosis	2	1	12	18	8	95	72
	Tuberculosis	1	9	62	54	67	442	474
Sexually Transmissible Infections	Chlamydia	488	570	3444	3456	3695	22539	22899
	Gonorrhoea	94	106	768	811	777	5400	4875
	LGV	1	0	3	6	1	19	14
Vaccine Preventable Diseases	Pertussis	288	261	2302	938	368	12080	3052
	Pneumococcal Disease (Invasive)	3	2	36	38	33	494	511
Vector Borne Diseases	Barmah Forest	2	0	6	22	34	184	163
	Dengue	3	2	41	68	75	339	378
	Malaria	1	1	9	7	16	47	87
	Ross River	18	17	92	282	64	1641	673
Zoonotic Diseases	Q fever	4	4	31	39	46	264	190

* Notes on Table 1: NSW Notifiable Conditions activity

- Data cells represent the number of case reports received by NSW Public Health Units and recorded on the NSW Notifiable Conditions Information Management System (NCIMS) in the relevant period.
- Data cells in the 'Adverse Event Following Immunisation' category refer to suspected cases only. These reports are referred to the Therapeutic Goods Administration (TGA) for assessment. Data on adverse events following immunisation is available online from the TGA Database of Adverse Event Notifications.
- Only conditions for which at least one case report was received appear in the table. HIV and other blood-borne virus case reports are not included here but are available from the [Infectious Diseases Data](#) webpage.